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PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)**

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/US2004/038369

International filing date (day/month/year)
16.11.2004

Priority date (day/month/year)
17.11.2003

International Patent Classification (IPC) or both national classification and IPC
B01D46/24, B01D45/04, B01D50/00

Applicant
DONALDSON COMPANY, INC.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**International application No.
PCT/US2004/038369**AP20 Rec'd PCT/PTO 15 MAY 2006****Box No. I Basis of the opinion**

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/US2004/038369

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-17
	No: Claims	-
Inventive step (IS)	Yes: Claims	-
	No: Claims	1-17
Industrial applicability (IA)	Yes: Claims	1-17
	No: Claims	-

2. Citations and explanations

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/US2004/038369

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following documents/:

- D1: EP-A-0 923 975 (ROBERT BOSCH GMBH; BAYERISCHE MOTOREN WERKE
AKTIENGESELLSCHAFT) 23 June 1999 (1999-06-23)
D2: US-B1-6 572 667 (GREIF VOLKER ET AL) 3 June 2003 (2003-06-03)

1. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claim 1 does not involve an inventive step in the sense of Article 33(3) PCT.

The document D1 is regarded as being the closest prior art to the subject-matter of claim 1, and discloses (the references in parentheses applying to this document):

A gas/liquid separator element (cf col. 1, ll. 44-52) comprising (cf figures 1-4):

- (a) first and second, opposite end caps (17,18);
- (b) a media pack (12) extending between the first and second end caps and defining an open central interior (15);
 - (i) the media pack including a drain stage (Z1, Z2) and a coalescing stage;
 - (ii) the media pack having a cross-sectional periphery with an oval or elliptical shape, thus having a long cross-sectional axis and a short cross-sectional axis, and
- (c) an outwardly directed spigot (17) having an oval or elliptical, i.e non-circular cross-section shape (cf also col. 4, ll. 11-15).

The only feature of claim 1 not being explicitly disclosed in D1 is the aspect ratio of at least 1,3 of the cross-sectional axis of the media pack. The cross-section of the media pack of D1 is a rather flat ellipse, consequently no inventive step can be seen in the subject-matter of claim 1. Moreover, D1 teaches (cf par. [0009]) to use gas/liquid separation elements having an oval or elliptical cross-section in order to obtain an assembly that is narrower.

2. Claim 10 defines a gas/liquid separator assembly including a separation element as defined in claim 1 (cf item c) of claim 10).

D2 discloses a gas/liquid separator assembly comprising

- (a) a vessel (10) including an outer wall, a gas flow inlet (18) projecting through the outer wall, a gas flow outlet (28) projecting through the outer wall and a lower sump (22);
- (b) a tube sheet arrangement separating the vessel into an upper region and a lower region (cf lower part of wall 10); the tube sheet arrangement being positioned so that the gas flow inlet is in direct communication with the lower region and the gas flow outlet is positioned to receive gas flow directly from the upper region;
- (c) at least one removable and replaceable separator element (12).

The assembly of D2 uses separation elements with oval cross-section just like disclosed in D1. It would be obvious to the skilled person to exchange the separation element of D2 with the type disclosed in D1, thus arriving at the subject-matter of claim 10 (Art. 33(3) PCT).

3. From the above comments under items 1 and 2 one can deduce that the methods of claims 16 and 17 do not involve an inventive step either (Art. 33(3) PCT).
4. Dependent claims 2-9 and 11-15 do not seem to contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of inventive step.